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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/618,326	07/18/2000	Yoshio Hagihara	15162/02250	9829
24367	7590	02/25/2004	EXAMINER	
SIDLEY AUSTIN BROWN & WOOD LLP.			WISDAHL, ERIC D	
717 NORTH HARWOOD			ART UNIT	
SUITE 3400			PAPER NUMBER	
DALLAS, TX 75201			2615	

DATE MAILED: 02/25/2004

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/618,326

Applicant(s)

HAGIHARA ET AL.

Examiner

Eric D Wisdahl

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 56 is/are pending in the application.
- 4a) Of the above claim(s) 1-55 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☐ Claim(s) ____ is/are rejected.
- 7) ☒ Claim(s) 56 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

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DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of Species X in Paper No. 7 is acknowledged.

It is noted that only claim 56 contains all limitations necessary for Species X. All other claims are withdrawn for reasons discussed below.

Claim 1 – 31 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 7.

It is noted that applicant has deemed claims 1 and 31 as being generic to all Species I – X. Such is not the case as the claims do not contain all of the essential portions of the elected species. Furthermore, Claim 1 is fundamentally different from the elected species in that the claims are drawn to placing a voltage on the control electrode of the 1st transistor as compared to placing a voltage on the second electrode as provided for in Species X.

Claims 35 and 46 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 7.

It is noted that applicant has deemed claims 35 and 46 as being “sub-generic” to Species VII – X. Such is not the case as the claims do not contain all of the essential portions of the elected species (i.e. 1st and 2nd transistors, Amplifying transistor, Select line transistor and Integrating capacitor). Since the applicant has submitted, in the specification, a description of an

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invention fundamentally different from the elected species, there are no generic (or sub-generic, a term which is not directly recognized by the office) claims present.

Claims 32 – 34, 36 – 45 and 47 – 55 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 7.

It is noted that applicant has deemed claims 32 – 34, 36 – 45 and 47 – 55 as relating to Species X. Such is not the case as the claims do not contain all of the essential portions of the elected species (i.e. 1st and 2nd transistors, Amplifying transistor, Select line transistor and Integrating capacitor). Since it is not easily seen that such features would be an obvious variation, through the detailed description of the portions of the elements used and the direct connection descriptions between those elements, one would need to include all of the portions of the elected species to be deemed a part of the species.

In other words, the office does not deem the claims that are missing one or more elements of the elected species (i.e. no amplifying transistor) to be a part of this species since they would instead relate to a separate species (all elements the same except for the missing amplifying transistor in Species IX).

Specification

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Allowable Subject Matter

Claim 56 is objected to as being dependent upon a withdrawn base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

The prior art does not disclose nor fairly suggest combination of limitations including the image sensing apparatus comprising:

- Plurality of pixels, each pixel comprising:
 - Photo-diode with two electrodes;
 - First MOS transistor having a first, second and gate electrode wherein:
 - the first and gate electrodes are connected to one of the electrodes of the photo-diode;
 - Second MOS transistor having a first, second and gate electrode wherein:
 - Gate electrode is connected to the first and gate electrodes of the first transistor as well as one of the electrodes of the photo-diode;
 - Third MOS transistor having a first, second and gate electrode wherein:
 - A direct voltage is applied to the first electrode;
 - Gate electrode is connected to the second electrode of the second MOS transistor;
 - The third transistor Amplifies the signal output from the second electrode of the second MOS transistor;

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- Fourth MOS transistor having a first, second and gate electrode wherein:
 - First electrode is connected to the second electrode of the third MOS transistor;
 - Second electrode is connected to an output signal line;
 - Gate electrode is connected to a Line Select Line;
- Capacitor wherein:
 - The capacitor has one end connected to the second electrode of the second MOS transistor;
 - The capacitor is reset through the second MOS transistor when a reset voltage is applied to the first electrode of the second MOS transistor;
- Controller that makes the individual pixels perform image sensing in such a way that the electric signal output from the photodiode is converted natural-logarithmically by feeding a first voltage to the second electrode of the first MOS transistor so as to make the first MOS transistor operate in a sub-threshold region below a threshold value thereof;
- Wherein the controller resets the individual pixels by, in each pixel, feeding a second voltage to the second electrode of the first MOS transistor so as to permit a larger current to flow through the first MOS transistor than before feeding the second voltage thereto.

The Closest art of Reference, Miyatake et al. (U.S. Patent 5, 241, 575), discloses:

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- Plurality of pixels, each pixel comprising:
 - Photo-diode with two electrodes (Figure 4A item 1);
 - First MOS transistor having a first, second and gate electrode wherein:
 - the first and gate electrodes are connected to one of the electrodes of the photo-diode (Figure 4A item 2a);
 - Second MOS transistor having a first, second and gate electrode wherein:
 - Gate electrode is connected to the first and gate electrodes of the first transistor as well as one of the electrodes of the photo-diode (Figure 4A item 2b);
 - Capacitor wherein:
 - The capacitor has one end connected to the second electrode of the second MOS transistor (Figure 4A item 3);
 - The capacitor is reset through the second MOS transistor when a reset voltage is applied to the first electrode of the second MOS transistor (Column 6 lines 9 – 17);
- Controller that makes the individual pixels perform image sensing in such a way that the electric signal output from the photodiode is converted natural-logarithmically by feeding a first voltage to the second electrode of the first MOS transistor so as to make the first MOS transistor operate in a sub-threshold region below a threshold value thereof (Column 2 lines 46 – 61, Column 6 lines 9 – 49);

Conclusion


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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric D Wisdahl whose telephone number is (703) 305-4915. The examiner can normally be reached on 9:00 - 6:00 Mon-Thur every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Christensen can be reached on (703) 308-9644. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Edw



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